Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS, JOSEPH, CHING-LANG CHIANG,
NEERAJ KHURANA, PRASAD SABBINENI
and DANIEL T. HURLEY

Appeal No. 2003-0508
Application No. 09/449,023

ON BRIEF

Before PAK, LIEBERMAN and KRATZ, Administrative Patent Judges.
KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's refusal to allow claims 1, 3, 5-7, 12, 14-18 and 20, which are all of the claims pending in this application.

BACKGROUND

Appellants' invention relates to an apparatus for damping vibrations between a video optical microscope and a test head for an integrated circuit, test apparatus including means for reducing relative movement between an integrated circuit test head and a video optical microscope, and a method for micro probing a semiconductor device that includes a step of viewing the semiconductor using a video microscope and provides for vibration damping between the microscope and an integrated circuit tester. An understanding of the invention can be derived from a reading of exemplary claims 1, 12 and 14, which are reproduced below.

> 1. Test apparatus comprising:
> a) an integrated circuit test head,
> b) a video optical microscope comprising an objective lens, and a video imager,
> c) a microscope movement apparatus for positioning the video optical microscope over the integrated circuit test head,
> d) a mounting means for holding the video optical microscope and microscope movement apparatus, and
> e) computer controlled clamping means attached between the video optical microscope and the integrated circuit test head, said clamping means being disabled during microscope movement but switched into a hard rigid mode during video image acquisition thereby firmly coupling the video optical microscope to the integrated circuit test head and reducing the relative motion between the video optical microscope and the integrated circuit test head, said clamping means comprising a plurality of piston driven rods coupled to the

video optical microscope and which engage the test head when actuated.

12. A method of microprobing a semiconductor device on top of a integrated circuit tester, said method comprising:

a) viewing the semiconductor device through a video microscope, said video microscope comprising an objective lens and a video camera,

b) connecting the video microscope to a microscope movement means which in turn are connected to a mounting means,

c) microprobing using microprobing means which are rigidly placed on top of the integrated circuit tester, and

d) vibration damping using a computer controlled clamping device which couples the integrated circuit tester to the video microscope, said clamping device being disabled when the video microscope is to be moved, and the clamping device being enabled when the movement is complete, allowing the video microscope to vibrate in unison with the tester, thereby reducing the relative motion between the microscope and tester, said vibration damping including using at least one piston driven rod coupled to the video microscope and which engage the integrated circuit tester when actuated.

14. Vibration damping apparatus for damping vibrations between an integrated circuit test head and a video optical microscope comprising a plurality of piston driven rods coupled to the video optical microscope with the rods engaging the test head when the piston driven rods are actuated, and means for computer controlling the piston driven rods during vibration damping.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

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| Hunter | 4,927,165 | May 22, 1990 |
| Gertel et al. (Gertel) | 5,549,269 | Aug. 27, 1996 |
| Young et al. (Young) | 5,705,814 | Jan. 06, 1998 |
| Colvin | 5,764,409 | Jun. 09, 1998 |

Claims 1 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Colvin in view of Gertel. Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Colvin in view of Gertel and Young. Claims 5-7, 14-18 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Colvin in view of Gertel and Hunter.

We refer to the briefs and the answer for a complete exposition of the opposing viewpoints of appellants and the examiner.

OPINION

We reverse all of the aforementioned rejections. Our reasoning follows.

Appealed method claim 12 requires the use of at least one piston driven rod coupled to a video optical microscope for vibration damping. All of the appealed apparatus claims require a plurality of piston driven rods coupled to a video optical microscope as part of the claimed vibration damping structure.

Colvin discloses a vibration reducing apparatus for use with a video optical microscope. Colvin teaches the use of cylindrical vibration stabilizer structures as depicted in drawing figures 4A through 4C and an alternative stabilizer structure (600, fig. 6) employing a leg for reducing vibrations

between a microscope and a surface supporting a chip to be viewed via the microscope. The examiner acknowledges that Colvin does not disclose the here claimed piston driven rod(s) as part of a stabilizer structure.

Gertel (column 1, lines 19-35) discloses a gas spring assembly including a piston supported within a housing for vibration isolation of table top equipment, such as microscopes. Gertel (column 2, lines 33-35) is concerned with forming a gas spring assembly having reduced horizontal stiffness. As depicted in figure 5, item 108 and discussed in the specification, the piston supports a load placed thereon, such as a tabletop.

Based on the combined teachings of Colvin and Gertel, the examiner urges that:

> it is considered obvious that the cylindrical members and leg portion of Colvin may be provided the piston rod supports as taught by Gertel for the support and anti-vibration of the microscopic equipment.

We do not agree with the examiner's obviousness position.

As explained by appellants in the brief (see, e.g., page 7), the examiner has not established why one of ordinary skill in the art would have been led to combine the disparate disclosure of Gertel with Colvin in a manner so as to arrive at the claimed subject test apparatus or method. In this regard, the examiner

does not specifically address how the disclosed table top supporting gas spring assembly of Gertel would have suggested a modification of the anti-vibration stabilizers of Colvin which are interposed between a chip and a video optical microscope in a manner so as to arrive at the claimed subject matter.

While the examiner (answer, page 11) is correct that Gertel suggests using their gas spring assembly for supporting a table top that may include equipment, such as an electronic microscope thereon, that disclosure does not establish why one of ordinary skill in the art would have been led to employ the gas spring assembly of Gertel in conjunction with the integrated circuit testing system of Colvin in a manner so as arrive at the here claimed subject matter with a reasonable expectation of success in so doing.

It is well settled that the mere fact that prior art may be modified to reflect features of the claimed invention does not make the modification obvious unless the desirability of such modification is suggested by the prior art. Rejections based on § 103(a) must rest on a factual basis based on the teachings of the prior art. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 177 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). Our reviewing court has repeatedly cautioned against employing

hindsight by using the appellants' disclosure as a blueprint to reconstruct the claimed invention from the isolated teachings of the prior art. See, e.g., Grain Processing Corp. v. American Maize-Products Co., 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988). From our perspective, the examiner's proposed combination of Colvin and Gertel appears to be premised on impermissible hindsight reasoning.

As the other references applied in the second and third stated rejections have not been relied upon by the examiner in a manner that makes up for the deficiency in the first stated rejection, it is our view that the examiner has not carried the burden of establishing a prima facie case of obviousness with respect to the subject matter defined by the appealed claims. Consequently, we reverse all of the stated rejections.

Other Issues

We observe that several of the appealed claims appear to include means-plus-function language. See, e.g., the "means for computer controlling the piston driven rods during vibration damping" limitation of claim 14. Such limitations require invocation of the strictures of 35 U.S.C. § 112, paragraph 6, wherein one must look to the specification for the appropriate

structure for those means. See Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318, 50 USPQ2d 1161, 1166 (Fed. Cir. 1999).

Construction of a means-plus-function limitation involves two steps. First, one must identify the claimed function. Telemac Cellular Corp. v. Topp Telecom, Inc., 247 F.3d 1316, 1324, 58 USPQ2d 1545, 1549 (Fed. Cir. 2001); Micro Chem., Inc. v. Great Plains Chem. Co., Inc., 194 F.3d 1250, 1258, 52 USPQ2d 1258, 1263 (Fed. Cir. 1999). After identifying the claimed function, one must then determine what structure, if any, disclosed in the specification corresponds to the claimed function. In order to qualify as corresponding, the structure must not only perform the claimed function, but the specification must clearly associate the structure with performance of the function. This inquiry is undertaken from the perspective of a person of ordinary skill in the art. See Amtel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 1378-79, 53 USPQ2d 1225, 1227-28 (Fed. Cir. 1999).

However, if an applicant fails to set forth an adequate disclosure setting forth the corresponding structure, the applicant could have, in effect, failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112. See Cardiac Pacemakers, Inc. v. St.

Jude Medical Inc., 296 F.3d 1106, 1114, 63 USPQ2d 1725, 1730 (Fed. Cir. 2002) and In re Dossel, 115 F.3d 942, 946, 42 USPQ2d 1881, 1885 (Fed. Cir. 1997).

With this in mind and prior to final disposition of this application, the examiner should review the claims and the specification to determine what disclosed structure, if any, corresponds to each of appellants' "means-plus-function" recitations to ensure compliance with the second paragraph of 35 U.S.C. § 112.

CONCLUSION

The decision of the examiner to reject the appealed claims under 35 U.S.C. § 103(a) as set forth in the answer is reversed.

REVERSED

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| CHUNG K. PAK<br>Administrative Patent Judge | ) |
| PAUL LIEBERMAN<br>Administrative Patent Judge | ) BOARD OF PATENT APPEALS AND INTERFERENCES |
| PETER F. KRATZ<br>Administrative Patent Judge | ) |

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